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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/581,983

06/07/2006

Pietro Baita

FE 6150 (US)

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34872

7590

03/18/2009

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EXAMINER

LU, C CAIXIA

ART UNIT

PAPER NUMBER

1796

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|-------------------------------------|--|
| Office Action Summary | Application No. 10/581,983 | Applicant(s) BAITA ET AL. | |
| | Examiner Caixia Lu | Art Unit 1796 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 February 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 7-15 is/are rejected.
- 7) ☒ Claim(s) 5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 2, 2009 has been entered.

Claim Rejections - 35 USC § 103

2. Claims 1-4 and 6-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiba (JP 63075009 A) in view of Korvenoja et al. (US 5,204,303).

Chiba teaches conducting ethylene and an α -olefin copolymerization in two stages, wherein a low molecular weight ethylene polymer is prepared in the first stage in the presence of a internal electron donor polysiloxane containing Ziegler catalyst and molecular weight modifier of hydrogen, after the ethylene polymer from the first stage polymerization is mixed with a glycol ether, a second stage ethylene polymerization is then conducted to provide a high molecular weight ethylene polymer (last three lines of page 6, pages 8-11, and Example 1 of pages 16-18). Based on the molecular weight distribution (Mw/Mn) ranging from 12 to 26 listed in the Table of pages 21 and 22, one would have expected the corresponding MIF/MIP to be in the range of the instant claims.

It is noted that Chiba does not expressly teach (i) conducting the polymerization in a gas phase polymerization, and (ii) internal electron donors besides polysiloxane. However, those limitations are considered conventional in the art. For example, Korvenoja discloses a Ziegler catalyst with various internal electron donors including ester and THF (col. 4, lines 26-36) for producing ethylene homopolymers or copolymers in a gas phase polymerization with enhanced regularities and desired densities.

Thus, it would have been obvious to a skilled artisan at the time the invention was made to employ gas phase polymerization process and the internal electron donor disclosed in Korvenoja to Chiba's ethylene polymerization process to conduct the multistage ethylene polymerization with increased catalytic activity and steric selectivity, improved mechanical properties of the ethylene polymers and productivity and in the absence of any showing criticality and unexpected results.

Allowable Subject Matter

3. Claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As correctly indicated by Applicants in the Remarks, Chiba only teaches the use of a glycol external electron donor and expressly teaches away any other fresh external electron donors such as those disclosed in claim 5.

Response to Arguments

4. Applicant's arguments and Amendments filed February 2, 2009 have been fully considered.

First of all, it is noted that Chiba expressly disclose copolymerization ethylene with an α -olefin in the second stage of polymerization (lines 1-3 from the end of page 6), and the examiner apologizes for inadvertently overlooked Chiba's teaching.

Secondly, applicants correctly indicated that Chiba's ethylene polymerization process is not a gas phase polymerization process, Chiba's polymerization process is a slurry polymerization process instead. However, conducting ethylene polymerization in gas phase is conventional and such is exemplified in Korvenoja (col. 8, line 28-38). Thus, it would have been obvious of conduct Chiba's two stage polymerization in gas phase in order to avoid using large amount of solvent and thus lower the cost.

Thirdly, Applicants again argue that Korvenoja teaches away from the present claims because Korvenoja discloses the procatalyst is useful for the preparation of ethylene having a narrow molecular weight distribution, whereas, the ethylene polymers described in the claimed process have a broad molecular weight distribution. The broad molecular weight distributions of Chiba's ethylene polymer compositions are due to the low and high molecular weight fractions of ethylene polymers prepared in the first and second stage respectively. Even when a catalyst provide polyolefin with narrow molecular weight distribution is used in Chiba's process, a bimodal polyolefin with a high molecular weight fraction and a low molecular weight fraction would produced, and such bimodal polyolefin are always expected to have broad molecular distribution as long as the difference between the high and low molecular weight fractions are sufficiently large. That is, it is irrelevant whether the Ziegler catalyst provide polyolefin with narrow molecular weight distribution. Contrary to applicants' assertion that Korvenoja teach

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away from Chiba's process, Korvenoja's catalyst composition can be used in Chiba's ethylene polymerization process to provide an ethylene polymer with bimodal molecular weight distribution which is always expected to be broad.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Caixia Lu whose telephone number is (571) 272-1106. The examiner can normally be reached on 9:00 a.m. to 5:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Caixia Lu/
Primary Examiner
Art Unit 1796